

Previous reports of bird/monkey associations refer to species of birds which are largely, if not solely, insectivorous.^{1,3,5,9} Sharp-shinned Hawks are predominantly bird-eating raptors, although they are reported to eat insects occasionally during the breeding season and on migration⁶; their diet is not described for the wintering grounds. Bird-eating raptors may be attracted to forage in association with monkeys due to the general flushing of potential prey (both insects and birds) by the troop, or because the monkey troops themselves attract insectivorous birds which are potential prey for raptors.

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ROOSTING AMERICAN KESTRELS (*Falco sparverius*) DURING MIGRATION IN SASKATCHEWAN

American Kestrels (*Falco sparverius*) are summer residents over much of Saskatchewan. The density of breeding birds can be very high in the northern boreal forest,^{1,2} while they are distributed more sparsely over the countryside and in urban areas in the southern prairie and parkland regions (pers. observation).³ Fall migration generally spans mid-August to mid-September (pers. observation).

While much is known of the breeding behavior and winter ecology of the American Kestrel,³ there are only a few observations of its roosting behavior.^{4,5,6} The availability of roost sites may be an important factor in determining the distribution of kestrels, at least in winter.^{3,5} Except for Merlins (*F. columbarius*) in winter (see ⁷ and references therein), our knowledge of roosting behavior in falcons is limited. Here we report on migrant American Kestrels congregating in an urban area to roost, as well as observations of intra- and inter-specific interactions near the roost site.

OBSERVATIONS

All observations were made in the city of Saskatoon (52°07'N 106°38'W) (see ⁷ for a description of the area), with efforts concentrated near our residences on the east side of the South Saskatchewan river within the older neighborhoods. The observations span 20 August to 13 September 1992, corresponding to the period of occupancy by the birds. During this period the overnight low temperature ranged from 1° to 10°C (\bar{x} = 4.9 SD = 3.6; Saskatoon Weather Office data).

We were initially alerted to the presence of kestrels in the residential area by their characteristic “klee” vocalization. This call is typically given in agonistic encounters.³ Virtually every evening during the observation period one to three kestrels were heard from within the house where one of us (GRB) lives.

Our casual searches in several parts of the city, and reports solicited from birdwatchers, suggest that many kestrels appeared in the city at dusk, generally between 1830 H and 1900 H. Rather than merely being more conspicuous, we believe that the birds actually arrived in the city in the evening. Only once during the 24 d were kestrels sighted prior to 1600 H. It is possible that some of these birds had nested in Saskatoon as there may be as many as 15 pairs in the city (I.G. Warkentin pers. comm.). The nearest nest to where most observations were made was 1.3 km away, and the family had dispersed from the area prior to 1 August. Given the time of year and relatively low density of urban-nesting kestrels, we believe most of the roosting birds were migrants entering the urban area from the countryside. On one occasion at 1900 H we drove to the edge of the city, and within a 1 km section of road bordering an agricultural field we observed three kestrels fly to and subsequently roost in the city.

Prior to roosting, kestrels normally perched on the tallest perches available, the tips of spruce trees (*Picea* spp.). On one occasion a television antenna was used as a perch, and it too was the tallest structure in the vicinity. The observations of 3 September 1992 are characteristic of the behavior we observed on most nights. Five kestrels (two of each sex and one unknown) were perched within a radius of 75 m centered around an intersection of two residential streets. During 30 min of observation that day we saw seven agonistic, intraspecific interactions. Males and females flew at other individuals of the same and opposite sex in an apparent attempt to displace the target bird. A Merlin with brown plumage also resided within this small area and made eight aerial attacks on the kestrels. These flights also appeared to be attempts at dislodging the perched kestrels, rather than predatory attacks. Both the attacking kestrels and Merlin would swoop at the perched bird and on occasion would then land approximately 1 m or less away in the same tree. While these attempts were usually unsuccessful, harassment by Black-billed Magpies (*Pica pica*) did force perched kestrels to relocate about one-half block away. The magpies would swoop at or drop on the kestrel from a hover.

Nine kestrels were observed to enter roosts. They did so 5–15 min after sunset, which varied between 2021 H and 2127 H over the study period. Each bird roosted about two-thirds the way up in a spruce, and nine different roost trees were used. The roost tree was never the tree that the bird had been perching in previously.

DISCUSSION

Although kestrels are sparsely distributed across the prairies during migration (pers. observation),³ it was our impression that there were remarkably fewer migrants near Saskatoon in 1992 than in previous years. From 1988 to 1991 it was not uncommon for us to find small groups of 2–14 birds within 20 km of the city. In 1992, however, we observed a total of only six individuals in 1425 km of travel in our search for kestrels across hundreds of kilometers of different roads around the city. Given we found as many birds roosting in one or two city blocks, the high density in the urban area seems remarkable.

We suspect that the attraction of the city may be its conifer trees. The countryside around the city has either few trees or typically only small, deciduous trees. Spruces are common ornamental trees and many residential blocks have five or more, although the American elm (*Ulmus americana*) constitutes 80% of the mature trees in the city (D. Domke pers. comm.). Balgooyen⁶ postulated that roosting in conifers was thermally advantageous for kestrels. Merlins wintering in Saskatoon roost in spruces, and by doing so they may save 6% of their total daily energy expenditure.⁸ Merlins also choose specific spruces from among those that are available; safety from predation and thermal properties may be important criteria for selection.⁷ Kestrels have also been seen to enter buildings and cavities to roost.⁵

Similar to our findings, Miller⁵ observed one female kestrel to roost 4–21 min after sunset. Merlins wintering in Saskatoon also enter spruce trees after sunset, but environmental factors as well as the time of sunset are important determinants of the timing of roost entry.⁹

Kestrels are known to be territorial in both the breeding season and in winter,^{3,6,10} but intraspecific agonistic behavior during migration or around roost sites has not been reported. Social groups (mixed families) of juvenile and adult kestrels are commonly observed after the breeding season (pers. observation).^{11,12} Similarly, despite a relatively uniform availability of spruces within any one neighborhood, roosting birds appeared to cluster. Our observations of aggressive vocal behavior and aerial attacks suggest that whatever attracts kestrels to one another during migration may potentially be in conflict with competition over roost sites.

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FIRST RECORD OF DILUTE PLUMAGE IN ROADSIDE HAWK (*Buteo magnirostris*)

On 16 August 1986, I obtained a Roadside Hawk chick, about 4 wk age that exhibited unusual plumage coloration. This bird was confiscated at the city of Xalapa, Veracruz, México, and was taken from the nest by a bird trapper from an unknown locality, presumably in the state of Veracruz. Some weeks later the bird died and the skin was prepared. It was deposited in the author's particular collection.

Plumage of this bird differed from the normal juvenile color (brown in most parts of the body) by being a very light brown or beige on back upper wing feathers and tail. I found no references of this coloration for this species in the literature (i.e., F. Weick and L. Brown 1980, *Birds of prey of the world*, William Collins and Sons and Co., London, U.K., W.S. Clark and B.K. Wheeler 1987, *A field guide to hawks of North America*, Houghton Mifflin Company, Boston, MA U.S.A.).

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